

Patent Claims

1. Hydraulic system with a multi-flow, especially dual-flow hydraulic pressure supply unit, such as a pump, through which a volume flow is fed to a consumer, wherein a valve apparatus for switching between the individual pump flows and/or for interconnecting the individual pump flows is provided.

2. Hydraulic system according to claim 1, wherein the individual pump flows are led together or separated by a stop valve.

3. Hydraulic system according to claim 2 wherein the at least one pump flow, which is separated by the stop valve from the at least one other pump flow, can be carried away through the valve apparatus.

4. Hydraulic system according to claim 3, wherein the valve apparatus has a surface pre-stressed by a spring-loaded apparatus that is acted upon with the back pressure of a feedback leading from a consumer to the input side of the hydraulic pressure supply unit.

5. Hydraulic system according to claim 4, wherein a hydraulic resistor is arranged between the valve apparatus and the input side of the hydraulic pressure supply unit.

6. Hydraulic system according to one of the preceding claims, wherein the valve apparatus has a 2/2 way valve that in the one position releases a connection provided between the output side of a pump flow and the input side of the hydraulic pressure supply unit, which is interrupted in the other position of the 2/2 way valve.

7. Hydraulic system according to one of claims 1 to 5, wherein the valve apparatus has three shifting stages whereby in the first shifting stage a cooling circuit is not supplied and only a pump flow is conveyed from the hydraulic pressure supply unit to the consumer, whereby in the second shifting stage the cooling circuit is not supplied and at least two pump flows are conveyed from the hydraulic pressure supply unit to the consumer, and whereby in the third shifting stage, the cooling circuit is supplied and at least two pump flows are conveyed from the hydraulic pressure supply unit to the consumer.

8. Hydraulic system according to claim 7, wherein the valve apparatus has a further shifting stage in which a safety valve is activated.

9. Hydraulic system according to one of claims 1 to 5, wherein the valve apparatus, especially as a 2/2 way valve, is designed such that only one pump flow is conveyed from the hydraulic pressure supply unit to the consumer as long as a first

pressure, especially the adjusting pressure of an automatic transmission, is smaller than or equal to the sum of a second pressure, especially the contact pressure of an automatic transmission, and is a spring force, and wherein at least two pump flows are conveyed from the hydraulic pressure supply unit to the consumer if the initial pressure, especially the adjusting pressure of an automatic transmission, is greater than the sum of the second pressure, especially the contact pressure of an automatic transmission, and the spring force.

10. Hydraulic system according to claim 9, wherein the valve apparatus includes a tappet whose one face is acted upon with a first pressure and whose other face is acted upon with the second pressure and the spring force.

11. Hydraulic system according to one of claims 1 to 5, wherein the valve apparatus includes at least one valve whose switch brings about that at least one of the pump flows is conveyed to the consumer and assumes an additional function.

12. Hydraulic system according to claim 11, wherein at least two valves are connected in series.

13. Hydraulic system according to one of the preceding claims, wherein a volume flow regulating valve is arranged between the output side of the hydraulic pressure supply unit and the consumer.

14. Hydraulic system according to one of the preceding claims, wherein turning the individual pump flows on or off takes place independent of need.

15. Hydraulic system according to one of the preceding claims, characterized in that the ratio between the individual pump flows is asymmetrical.

16. Hydraulic system according to claim 15, wherein a first pump flow comprises approximately a third and a second pump flows approximately two thirds of the entire conveyed flow of the hydraulic pressure supply unit.

17. Hydraulic system according to one of the preceding claims, wherein the hydraulic pressure supply unit includes a vane cell pump or an internal gear wheel pump.

18. Hydraulic system according to claim 17, wherein a hydraulic resistor is arranged between the valve arrangement and the input side of the hydraulic pressure supply unit which includes an injector pump which is incorporated into the vane cell pump.

19. Automatic transmission for motor vehicles with a hydraulic system according to one of the preceding claims.